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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/628,366      | 07/31/2000  | Chandra S. Chekuri   | 3-5-13-12-5         | 4170             |

7590

12/08/2003

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| EXAMINER |
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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2661

DATE MAILED: 12/08/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/628,366

Applicant(s)

CHEKURI ET AL.

Examiner

Anthony T Ton

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Specification Objections***

1. The disclosure is objected to because of the following informalities:
  - a) Page 1 lines 6-8: The Serial No. of U.S. Patent Application entitled "Methods and Apparatus for Design, Adjustment or Operation of Wireless Networks Using Pre-Frequency-Assignment Optimization" should be specified.
  - b) Page 5 line 13: Term "post-frequency-assignment optimization stages" should be changed to "a post-frequency-assignment optimization stage" to be complied with "a three-stage process" cited on line 12 of this page.
  - c) Page 11 line 7 and page 19 line 22: Term "step 146" cannot be found in Fig. 3 of the Drawings. This must be a typo; it is suggested that change "step 146" to "step 142" to be appropriate with such step listed in Fig.3.
  - d) Page 11 line 10: Term "(C/I+N)" should be changed to "(C/(I+N))" to distinguish clearly between numerator and denominator of the ratio of Carrier to Interference plus Noise.
  - e) Page 17 lines 20 and 21: Term "could each have" should be changed to "each could have".

Appropriate correction is required.

***Claim Objections***

2. Claim 6 is objected to because of the following informalities:

In Claim 6 line 2, term "an FDMA" should be changed to "a FDMA".

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-4, 7-10 and 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Dufour et al. (US 6,049,717).

a) Claims 1 and 2: Dufour et al. disclosed an operator assisted tool and method for frequency plan revision within a cellular telephone system. In which, a frequency-planning tool is used for supporting interactive operator participation in the three-pass process; through a graphical user interface, the operator is presented with information relating to radio environment statistics measurements, and is allowed based on the information to interactively develop each proposal. A selection of a single proposal per cell may also be made to initiate adjustments; furthermore, the operator is presented with pre-update verification results, and is allowed based on the results to interactively

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select one proposal per cell for implementation and retune. Additionally, following retune, the operator is presented with post-update verification results, and is allowed to consider based on the results the effects of network update, determine efficiency, and then either confirm the update or institute a roll-back. In each case, the tool provides special aids for operator use in constructing and evaluating proposals. These aids include features for cell sorting by uplink interference, restricted viewing of candidates to a given mode, and a given orientation or containing a certain number of frequencies.

Therefore, Dufour et al. disclosed all limitations of the claims 1 and 2 (see Fig.2 and col.1 line 62 – col.4 line 11; col.6 line 27 – col.8 line 38; col.16 line 16 – col.17 line 51; and col.27 lines 14-40).

b) Claim 3: The method of claim 1, wherein at least a subset of the three stages of the three-stage optimization process are repeated in an iterative manner (see steps 110 and 120 in Fig.2).

c) Claim 4: The method of claim 1, wherein the frequency assignment stage comprises a frequency planning stage (see Fig.1; col. 2 line 50; and col.3 lines 59-61).

d) Claim 7: The method of claim 1, wherein the optimization process utilizes a derivative-based optimization of a specified objective function (see block 108 in Fig.2; and col.7 lines 27-44).

e) Claim 8: The method of claim 1, wherein the operating parameter of the wireless network comprises at least one of a base station transmit power and an antenna orientation (see label 18 in Fig.1; and col.9 lines 17-26).

f) Claim 9: The method of claim 1, wherein the optimization process determines a network configuration for specified values of network capacity and network coverage (see col.3 lines 17-58).

g) Claim 10: The method of claim 1, wherein the optimization process generates a graphical display in the form of tradeoff curve of capacity versus coverage. Dufour et al. did not clearly disclose a tradeoff curve of capacity versus coverage. However, Dufour et al do teach a graphic user interface of the frequency planning tool, in which, operator can view the results (see col.11 line 19 – col.13 line 4; and col.21 line 35 – col.22 line 24). Therefore, it is inherent that Dufour et al. teach all limitations of this claim..

h) Claim 12: The claimed limitations disclosed in the claim 12 are the same as that in the Claim 1. Therefore, Dufour et al would apply the rejections in the claim 1 to claim 12 in an apparatus of a processor-based system as taught.

i) Claim 13: Dufour et al would apply the rejections in the claim 1 to claim 13 in an apparatus as taught.

j) Claim 14: The claimed limitations disclosed in the claim 14 are the same as that in the Claim 1. Therefore, Dufour et al would apply the rejections in the claim 1 to claim 14 in an article as taught.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dufour et al. (US 6,049,717) in view of Alamouti et al. (US 6,560,209).

a) Claim 5: Dufour et al do not clearly teach a wireless network that implements a frequency reuse factor greater than one ( $FRF > 1$ ). However, Dufour et al do teach a frequency reuse using in FDMA and TDMA networks (see col.1 line 66 – col.2 line 18; and col.4 lines 45-58). Alamouti et al do teach such a FRF (see col.4 lines 29-33). Therefore, it would have been obvious to modify such a FRF of Dufour et al. as taught by Alamouti et al. for improving the spectral efficiency in network performance as well as reducing the interferences of co-channels in communications systems.

b) Claim 6: Dufour et al failed to teach the wireless network comprises at least a CDMA wireless network, an OFDMA wireless network, and a TDD wireless network. Alamouti et al do teach such wireless networks (see abstract; col.2 lines 34-38; and col.5 lines 7-19). Therefore, it would have been obvious to one of ordinary skill in the art can employ such networks of Dufour et al, as taught by Alamouti et al. so that cellular phones and personal communications systems can be operated in a plurality of protocols in wireless communications systems.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dufour et al. (US 6,049,717) in view of Leung et al. (US 6,262,980).

In Claim 11, Dufour et al failed to teach a display in the form of a tradeoff curve of percent carrier-to-interface ratio above threshold versus coverage. Leung et al do teach such a tradeoff curve (see col.4 lines 14-21; col.6 lines 35-40; Figs. 8-10; and col.15 lines 11-48). Therefore, it would have been obvious to one of ordinary skill in the art can employ such a tradeoff curve of Dufour et al, as taught by Leung et al. in order to provide a best quality signal that has been assigned to subscribers.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-4, 6, 9 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Gunmar et al. (US 5,293,640).



Gunmar et al. disclosed a method for planning radio cells utilizing an exclusion matrix calculated on the basis of measured field strengths and an iterative allocating algorithm. The method comprising the steps of: a traffic demand is geographically estimated; an acceptable coverage of the traffic demand is produced with the aid of a number of cells with suitable transmitter powers and antenna arrangements; each cell is allocated a number of channels, which corresponds to the estimated traffic demand, having regard to a margin for acceptable blocking; coverage and interference measurements are carried out for the cells, which measurement results are stored in a measurement data base; an exclusion matrix is calculated on the basis of the measurement results, which matrix represents the interaction between the cells in the system; an allocating algorithm is iterated, which algorithm, by utilizing a random technique, provides different collections of channel allocations for the cells; if the channel allocation is not possible with regard to the number of channels in a given frequency band, a new attempt is made and the subsequent steps are repeated; and if the number of channels was sufficiently high, a radio cell design is obtained which is acceptable from the point of view of interference and the point of view of blocking.

Therefore, Gunmar et al. disclosed all limitations listed in the claims 1-4, 6, 9 and 12-14 (see co.1 line 5 – col.2 line 68).

***Citation of Relevant Prior Art***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Patent number of the prior art listed below is considered as

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citation of relevant prior art in the field of the invention is directed to methods and apparatus for design, adjustment or operation of wireless networks using multiple-stage optimization: Soliman et al. (US 5,710,758 and US 6,111,857); Soliman (US 6,556,832); Clarkson et al (US 6,631,267 and US 6,611,500); and Feisullin et al. al (US 5,949,988).

***Examiner Information***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony T. Ton whose telephone number is 703-305-8956. The examiner can normally be reached on Monday-Friday from 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W Olms, can be reached on (703) 305-4703. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

ATT

  
**KENNETH VANDERPUYE**  
**PRIMARY EXAMINER**